PROCEDURE

SAFE HANDLING OF CYTOTOXIC, MONOCLONAL ANTIBODY & HAZARDOUS NON-CYTOTOXIC DRUGS

TARGET AUDIENCE

All nursing, pharmacy and medical staff involved with dispensing, preparation, or administration of medicines.

STATE ANY RELATED PETER MAC POLICIES, PROCEDURES OR GUIDELINES

Administration and Management of Anti-Cancer Drugs
Administration of Cytotoxics in the Home/Community
Collection and Disposal of Soiled Linen
Dangerous Goods and Hazardous Substances
Environmental Management
Individual Personal Protective Equipment (Cancer Research Division)
Management of Cytotoxic Drug Spill
Medication Management
Medication Management for Nurses
Pharmaceutical Review & Medication Supply
Personal Protective Equipment
Administration of Intravesical Immunotherapy BCG

PURPOSE

This procedure provides direction to all hospital staff involved in the management, preparation, transportation, administration of hazardous drugs and related wastes. In particular, safe handling practices for cytotoxic and hazardous non-cytotoxic drugs are outlined.

BACKGROUND

Hazardous drugs are regulated medicines that have been classified by the National Institute for Occupational Safety and Health (NIOSH) of the United States and/or the Cancer Institute New South Wales as posing a risk to health from occupational exposure.

Exposure to hazardous drugs can result in adverse health effects in healthcare workers. The health risk depends on how much exposure a worker has to these drugs and the specific toxicity of the drug. The occupational exposure risk of hazardous drugs is therefore evaluated according to risk of internalisation (by ingestion, absorption through mucous membranes, and penetration of skin) and risk of toxicity (carcinogenicity, genotoxicity, teratogenicity, and reproductive or fertility impairment, organ toxicity) at low doses and continuous exposure.

Hazardous drugs include both cytotoxic and non-cytotoxic medicines such as chemotherapy, monoclonal antibodies, immunomodulatory drugs, and some anti-infective drugs. A drug is

defined as hazardous if it has exhibited one or more of the following effects at standard clinical doses in human or animal studies:

- carcinogenicity
- genotoxicity
- teratogenicity
- reproductive or fertility impairment
- serious organ toxicity or adverse health effects at low doses in experimental animal models or treated patients
- the structure and toxicity profiles of new drugs that mimic existing drugs determined hazardous by the five previous criteria

These drugs require safe handling precautions by staff if there is a risk of internalisation of the substance through ingestion, aerosol inhalation or absorption into mucous membranes. Exposure may occur from solid (particulate) or liquid aerosols, liquid spills or splashes and needle stick injuries. Solid formulations such as intact, coated tablets pose a lesser risk than liquid formulations. If a non-cytotoxic hazardous drug in solid dosage form is to be crushed, cut, or dispersed for administration, this increases the risk of internalisation of powder. Exposure may occur due to direct exposure with unchanged drug or active metabolites. Other than at preparation and administration, additional PPE during handling of patient or related waste may need to be considered

Workers can be protected from occupational exposures to cytotoxic and hazardous drugs through engineering and administrative controls and from correct use of personal protective equipment (PPE). Occupational health and safety and worker compensation authorities as well as various professional practice standards for nursing and pharmacy unanimously mandate the use of PPE by healthcare workers who handle hazardous drugs.

DEFINITIONS

Carcinogenicity	The property or capability to cause cancer.
Closed system transfer device (CSTD)	Drug transfer device that mechanically limits the transfer of environmental contaminants into a system and the escape of hazardous drug or vapour concentrations outside the system.
Cytotoxic drug	Hazardous drugs which are capable of disrupting the growth and function of healthy and diseased cells. These drugs have shown to exhibit carcinogenicity, genotoxicity, organ toxicity, teratogenicity and/or reproductive toxicity at treatment doses in clinical studies. Commonly used to refer to antineoplastic drugs that selectively damage or destroy dividing cells.
Developmental toxicity	Toxicity resulting in adverse effects experienced during pregnancy. These effects can manifest at any life stage.
Genotoxicity	The property or capability of a drug to cause a destructive effect on a cell's genetic material (DNA, RNA) affecting its integrity. This can result in heritable changes in the genetic material in germ cells.
Hazardous non-cytotoxic drug	Hazardous drugs other than cytotoxic drugs which are capable of disrupting the growth and function of healthy and diseased cells. These drugs have shown to exhibit genotoxicity, organ toxicity, teratogenicity and/or reproductive toxicity at treatment doses in clinical studies.
Immunosuppressant	An agent that acts to reduce the activation or efficacy of the immune

drug	system. This may prevent or interfere with the development of an immunologic response.
Immunomodulatory drug	Substances that alters the immune response by augmenting or reducing the ability of the immune system to produce antibodies or sensitised cells.
Monoclonal antibody (MAB)	A single type of antibody which targets specific antigens. These molecules specifically bind to target cells or proteins and stimulate the patient's immune system to produce an immunological response which may exert direct or indirect anti-tumour effects. Where a MAB is conjugated to a cytotoxic drug, the whole molecule is classified as cytotoxic.
Mutagenicity	The property or capability of a drug to cause a change or mutation in genetic material. When these toxicities result in heritable changes in the genetic material in germ cells, this is known as genotoxicity.
Organ toxicity	The property or capability of a drug to impair organ function.
OHS	Occupation Health and Safety.
Reproductive hazardous drug	Hazardous drugs that have shown to exhibit a teratogenicity and/or reproductive toxicity at treatment doses in clinical studies. These drugs are considered to carry a reproductive risk.
Reproductive toxicity	Toxicity that interferes with reproductive ability or capacity (fertility), including effects on lactation.
Targeted therapy	An agent that blocks the growth and spread of cancer by interfering with specific molecules involved in tumour growth and progression.
Teratogenicity	The property or capability of a drug to disturb the development of an embryo, cause foetal malformations or halt a pregnancy. These effects can manifest at any stage of pregnancy.

ORGANISATIONAL PERSONAL PROTECTIVE EQUIPMENT

Full PPE as defined at Peter Mac comprises of:

- Two pairs of nitrile gloves
- A long-sleeved gown of impermeable material
- Protective eye-wear with side shields such as goggles
- A particulate respirator mask (P2/N95), i.e. not surgical mask

For Operating Suite: Proshield Super Fog Fluid Resistant masks with or without shield (if without shield, then the staff should wear goggles (BSN Medical). These are suitable for all procedures including LASER, chemotherapy and surgery.

PHARMACY PREPARATION OF HAZARDOUS DRUGS

All injectable cytotoxic medicines must be prepared in pharmacy in a laminar flow cytotoxic drug safety cabinet (CDSC). All intravenous cytotoxic drugs and conjugated MABs (other than elastomeric infusors) have a closed system transfer device attached to the product for administration. Once prepared, if an alteration is required, the product must be returned to cytosuite for manipulation. No manipulations of cytotoxic drug products are to occur outside of cytosuite.

It has been agreed that selected hazardous non-cytotoxic drugs are prepared in the RMH Pharmacy sterile room and specific drugs have a closed system transfer device attached to the container (such as cidofovir, ganciclovir).

For operational reasons (not OHS considerations), preparation of intravenously injected monoclonal antibodies will take place in the Peter Mac Cytosuite. This ensures sterility of the contents of the vial and allows multiple doses to be obtained from a single vial and promotes safe compounding of MAB doses that may require complex manipulation or withdrawal of exact volumes.

RATIONALE AND RISK MATRIX FOR RECOMMENDED SAFETY CONTROLS

The occupational exposure risk of hazardous drugs is evaluated according to risk of internalisation (by ingestion, aerosol inhalation, or absorption through mucous membranes) and risk of toxicity (carcinogenicity, genotoxicity, teratogenicity, developmental or reproductive toxicity) at low doses and continuous exposure. In addition, exposure risk is evaluated based on modifying factors including the packaging of the agent for oral consumption (e.g. blister packing versus tablet bottle), and formulation (e.g. coated versus uncoated tablet; tablet or capsule versus liquid). Packaging or oral formulations that contribute to particulate matter during handling during dispensing or administration require protection to avoid inhalation or exposure to mucous membranes. A respiratory mask should be considered during preparation and administration of all hazardous drugs where there is a risk of aerosolisation or splash. The following are examples of tasks that may pose a risk;

- reconstitution of a powder vial then withdrawal of vial contents into a syringe and addition of drug to a diluent bag
- removal of syringe cap of hazardous drug
- hazardous non-cytotoxic drugs:
    - crushing or cutting a solid tablet
    - opening a capsule
    - reconstitution of an oral liquid

In assessing the risk of occupational exposure for cytotoxic and hazardous non-cytotoxic drugs, the following factors have been considered:

Cytotoxics (Refer Appendix 1 for list of drugs)

- Refer to Administration and Management of Anti-Cancer Drugs procedure for detail about safe handling practices of cytotoxic anti-cancer medicines.
- Published studies have shown that workplace exposures to hazardous drugs can cause both acute reactions such as skin rashes, hypersensitivity, nausea and vomiting, and chronic health effects such as adverse reproductive outcomes (including infertility, spontaneous abortions, and congenital malformations), and possibly leukaemia and other cancers.
- A number of published studies have demonstrated that the introduction of approved closed system transfer devices (CSTD) during preparation and closed system administration equipment during administration can reduce surface contamination and staff exposure when used in conjunction with traditional PPE and preparation facilities.
- All injectable cytotoxic medicines must be prepared in pharmacy in a laminar flow cytotoxic drug safety cabinet (CDSC). Once prepared, alterations are only to be made by the Peter Mac Cytosuite.

- At Peter Mac, CSTDs are utilised for all intravenous cytotoxic drugs except those manufactured in an elastomeric infusor. CSTDs are not used for small volume preparations that require needle attachment such as subcutaneous and intramuscular injections where residual volume losses may result in preparation of an incorrect dose or significant drug wastage.
- For topical formulations, gown, gloves and protective eyewear are required.

Monoclonal antibodies (MABs, refer Appendix 2 for list of drugs)

- MABs are large protein molecules that are many hundred to thousand times larger than small drug molecules. The risk of internalisation of MABs is significantly smaller as these molecules cannot penetrate through the dermal layers of skin and have reduced likelihood of aerosolisation. Whilst unlikely, internalisation may still occur through ingestion or exposure to mucosa. As such, respiratory mask and protective eye wear must be worn for tasks that may pose an increased risk of internalisation or splash.
- Some MABs are conjugated with a cytotoxic drug (e.g. trastuzumab emtansine). For these products, cytotoxic handling precautions should be followed.
- Unconjugated MABs are not constitutionally cytotoxic drugs and do not exhibit carcinogenic, genotoxic, or mutagenic effects. Some MABs may exhibit organ toxicity, or be teratogenic or pose risk of developmental toxicity at therapeutic doses however these effects are unquantified and undetermined amongst healthcare workers. Hence specific toxicities are not recognised as a class effect for all MABs. There are no OHS concerns about risk of adverse health outcomes from occupational exposure to MABs.
- MABs are commonly used in combination with chemotherapy in treatment protocols. In order to maintain efficient nursing workflow, Peter Mac nursing staff will use gown, gloves, protective eyewear for all MABs as standard practice. This is an organisational decision and not based on safety precautions for handling MABs.

Hazardous non-cytotoxic drugs (Refer Appendix 3 for list of drugs)

- All injectable forms (intravenous, subcutaneous, intramuscular, intravesical etc) have the potential for internalisation through ingestion, aerosol inhalation, or absorption through mucous membranes. These products require full PPE for handling.
- Oral formulations that are manipulated (e.g. cut, crushed, dispersed) pose a risk of internalisation and require full PPE for preparation and administration. Intact oral formulations can be handled with standard precautions for medicines handling (i.e. double gloves).

Reproductive hazardous drugs (Refer Appendix 3 for list of drugs)

- These drugs pose a risk to staff (regardless of gender) who are actively trying to conceive, and female staff who are pregnant or breastfeeding.
- Staff who self-identify as one of these categories should use full PPE for all injectable forms (including pre-filled syringes) and manipulated oral formulations. Intact oral formulations can be handled with standard precautions for medicines handling.
- All other staff should use standard PPE for handling hazardous non-cytotoxic drugs.

STAFF TRAINING AND ACCREDITATION

No additional medication credentialing is required to administer hazardous non-cytotoxic drugs that are used for non-cancer indications.

For further details refer to the following:
Administration and Management of Anti-Cancer Drugs
Medication Management

WASTE MANAGEMENT

For information refer:
Dangerous Goods and Hazardous Substances
Management of a Cytotoxic & Hazardous Non Cytotoxic Drug Spill

SPILL MANAGEMENT

For information refer:
Management of a Cytotoxic & Hazardous Non Cytotoxic Drug Spill
Environmental Management
Collection and Disposal of Soiled Linen

HEALTH SURVEILLANCE

Staff who are actively trying to conceive (regardless of gender) and female staff who are pregnant or breastfeeding who are involved in the preparation or administration of cytotoxic or hazardous drugs and handling of related waste should be informed of the reproductive risks and possible effects on foetal development. All staff should be made aware of the Family Planning/Pregnancy Checklist.

At the time of publication of this document, none of the drugs defined as cytotoxic or hazardous non-cytotoxic are listed as hazardous substances in the OHS Regulations 2017 Schedule 9. There is no requirement for routine employee health monitoring at Peter Mac. In the event of staff exposure due to splash or spill contamination, Peter Mac OHS may advise health monitoring on an ad-hoc basis.

PPE REQUIREMENTS FOR SAFE HANDLING AT PETER MAC

<table>
<tr><th colspan="3">All intravenous</th></tr>
<tr><th>Cytotoxic drugs</th><th>Monoclonal antibodies</th><th>Hazardous non-cytotoxic drugs</th></tr>
<tr><td>Prepared by Pharmacy Container labelled 'CYTOTOXIC'</td><td>Prepared by Pharmacy
Container labelled
'MONOCLONAL ANTIBODY'</td><td>Prepared by Pharmacy or Nursing
Drug chart annotated 'HAZARDOUS NON-CYTO' or 'REPRODUCTIVE RISK'</td></tr>
<tr><td>CSTD[1] + administration set(with "Cytotoxic" line label)
All staff
Full PPE:
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear
4. respirator masks (if risk of aerosolisation or splash)</td><td>No CSTD
All staff
Full PPE:
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear</td><td>No CSTD[2]
Hazardous non-cytotoxic drugs (all staff) & reproductive hazardous drugs (relevant staff)
Full PPE:
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear
4. respirator masks (if risk of aerosolisation or splash)
Reproductive hazardous drugs (all other staff)
PPE: two pairs of nitrile gloves</td></tr>
<tr><th colspan="3">All intravenous Injectable: intrathecal, subcutaneous, intramuscular, intravitreal, intradermal, intravesical, intraperitoneal, intravascular</th></tr>
<tr><th>Cytotoxic drugs</th><th>Monoclonal antibodies</th><th>Hazardous non-cytotoxic drugs</th></tr>
<tr><td>Prepared by Pharmacy Container labelled 'CYTOTOXIC'</td><td>Prepared by Pharmacy or Nursing
Container labelled
'MONOCLONAL ANTIBODY'</td><td>Prepared by Pharmacy or Nursing
Drug chart annotated 'HAZARDOUS NON-CYTO' or 'REPRODUCTIVE RISK'</td></tr>
<tr><td>No CSTD
All staff
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear
4. respirator masks (if risk of aerosolisation or splash)</td><td>No CSTD
All staff
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear</td><td>No CSTD
Hazardous non-cytotoxic drugs (all staff) & reproductive hazardous drugs (relevant staff)
Full PPE:
1. long sleeved impermeable gown
2. two pairs of nitrile gloves
3. protective eyewear
4. respirator masks (if risk of aerosolisation or splash)</td></tr>
</table>

[1]Elastomeric infusors manufactured by pharmacy do not have a CSTD attached. Sterile gauze may be used to surround the luer lock end as an additional barrier to reduce risk of exposure during connection and disconnection

[2]Ganciclovir, cidofovir & ribavirin are the only hazardous non-cytotoxic drug compounded with a CSTD. Other hazardous non- cytotoxic drugs made by RMH Pharmacy do not have CSTD attached.

Oral administration

Cytotoxic drugs	Hazardous non-cytotoxic drugs
Drug chart annotated '**CYTOTOXIC**'	Drug chart annotated '**HAZARDOUS NON-CYTO'** or '**REPRODUCTIVE RISK**'
Intact, coated tablets or hard-walled capsules PPE: two pairs of nitrile gloves **Intact uncoated tablets[3] (e.g. methotrexate, 6-mercaptopurine, tioguanine) or oral liquid** Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear 4. respirator masks (if risk of aerosolisation or splash) **Manipulation of oral formulation** Contact pharmacist or Medicines Information Oral formulations of cytotoxic drugs must never be crushed or modified without advice from Pharmacy	**All intact tablets or capsules** PPE: two pairs of nitrile gloves **Manipulated oral formulation or oral liquid** Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear 4. respirator masks (if risk of aerosolisation or splash) **Inhalation or nebulisation** Refer to pentamidine and ribavirin guidelines

All forms clinical trial or compassionate access medicines

Unless commercial stock is used (refer to Appendix 1-3)

Cytotoxic drugs	Monoclonal antibodies	Hazardous non-cytotoxic drugs
Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear 4. respirator masks (if risk of aerosolisation or splash)	Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear	Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear 4. respirator masks (if risk of aerosolisation or splash)

Topical

Cytotoxic drugs	Hazardous non-cytotoxic drugs
Drug chart annotated '**CYTOTOXIC**'	Drug chart annotated '**HAZARDOUS NON-CYTO'** or '**REPRODUCTIVE RISK**'
Full PPE: 1. long sleeved impermeable gown 2. two pairs of nitrile gloves 3. protective eyewear	PPE: two pairs of nitrile gloves

[3]At the time of this review, methotrexate, 6-mercaptopurine and tioguanine were the only known uncoated oral cytotoxic tablets. For information about a specific product, staff could search MIMS or contact ward/unit pharmacist for further information.

RESPONSIBILITIES

Nursing Staff	Nursing staff are responsible for the safe administration of chemotherapy (excluding intrathecal, intraventricular, intraperitoneal and intravesical chemotherapy administration) to patients as outlined in the patient's treatment plan. Chemotherapy and anti-cancer drugs may only be administered by nursing staff that have attained competency, through completing the training and assessment in "Management of Cytotoxic Chemotherapy", as per the Criteria for Essential Clinical Competency Assessments document at Peter Mac. All nursing staff, prior to checking intrathecal chemotherapy for administration must complete the Online Intrathecal Chemotherapy training module (refer to Intrathecal Anti-cancer Therapies Administration and Management). Nursing staff are required to employ appropriate PPE during dispensing, preparation, and administration relevant to the type of hazardous drug as outlined in this document.
Medical Staff	Consultants and registrars that are in an appropriate training program (Medical Oncology/Haematology) are responsible for the prescribing of hazardous drug therapy in line with the patient's treatment plan, using the required Oncology Information Management System (Charm) or on inpatient medication charts. All medical staff, prior to prescribing, checking or administering intrathecal chemotherapy must complete the Online Intrathecal Chemotherapy training module (refer to Intrathecal Anti-cancer Therapies Administration and Management). Medical staff are required to employ appropriate PPE during administration relevant to the type of hazardous drug as outlined in this document.
Pharmacy Staff	Pharmacy is responsible for the safe supply of all forms of hazardous drugs and pharmaceutical care of patients receiving hazardous drug therapies in the hospital. This includes clinical checking of orders, preparation of individual products and supportive care as required. Ward pharmacists are responsible for annotating "CYTOTOXIC", "HAZARDOUS NON-CYTO non-cytotoxic" or "REPRODUCTIVE RISK" when hazardous drugs are prescribed on the inpatient medication charts. This should be completed in a timely manner according to the acuity of the patient. Pharmacy staff are required to employ appropriate PPE during dispensing and preparation relevant to the type of hazardous drug as outlined in this document. Pharmacists must be credentialed to be able to check and verify anti-cancer drug orders including outpatient prescriptions. This is achieved by completing the oral therapies and chemotherapy competency and education training modules through pharmacy.
Clinical Products Advisor	Clinical Product advisor is responsible for identifying the clinical products and/or equipment available and those appropriate for trial; this analysis will include compliance with HPV tender outcomes, product reliability, company support and economic factors. Product/equipment implementation affecting more than a single area will be coordinated in conjunction with the CPA to ensure that adequate education and product training has been completed to facilitate safe product implementation and staff acceptance/compliance with the change process.

LEGISLATION/REFERENCES/SUPPORTING DOCUMENTS

NSQHS (2012) Standard 1

NSQHS (2012) Standard 4

Alexander M, King J, Bajel A, Doecke C, Fox P, Lingaratnam S, Mellor JD, Nicholson L, Roos I, Saunders T, Wilkes J. Australian consensus guidelines for the safe handling of monoclonal antibodies for cancer treatment by healthcare personnel. Internal Medicine Journal. 2014 Oct;44(10):1018-26.

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Occupational Health & Safety Regulations 2017

FURTHER INFORMATION

Medicines Information Service
Quality Use of Medicines Pharmacist
Director of Pharmacy

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APPENDIX 1 – CYTOTOXIC DRUGS

Refer to page 7 for recommended PPE

Amsacrine	Dacarbazine	Idarubicin	Pentostatin
Arsenic trioxide	Dactinomycin	Ifosfamide	Pralatrexate
Azacitidine	Daunorubicin	Inotuzumab ozogamicin	Procarbazine
Belinostat	Decitabine	Irinotecan	Raltitrexed
Bendamustine	Dexrazoxane	Irinotecan liposomal	Romidepsin
Bleomycin	Docetaxel	Ixabepilone	Streptozocin
Bortezomib	Doxorubicin	Lomustine	Talazoparib
Brentuximab vedotin	Doxorubicin liposomal	Marizomib	Temozolomide
Busulfan	Epirubicin	Melphalan	Teniposide
Cabazitaxel	Eribulin	Mercaptopurine	Thioguanine
Capecitabine	Etoposide	Methotrexate	Thiotepa
Carboplatin	Etoposide phosphate	Mitomycin	Topotecan
Carfilzomib	Floxuridine	Mitozantrone	Trabectedin
Carmustine	Fludarabine	Nelarabine	Trastuzumab emtansine
Chlorambucil	Fluorouracil	Oxaliplatin	Treosulfan
Cisplatin	Fotemustine	Paclitaxel	Vinblastine
Cladribine	Gemcitabine	Paclitaxel (nanoparticle	Vincristine
Clofarabine	Gemtuzumab ozogamicin	albumin-bound, nab)	Vinflunine
Cyclophosphamide	Histrelin	Panobinostat	Vinorelbine
Cytarabine	Hydroxyurea	Pemetrexed	Vorinostat

APPENDIX 2 – MONOCLONAL ANTIBODIES

Refer to page 7 for recommended PPE

Alemtuzumab	Infliximab
Atezolizumab	Ipilimumab
Avelumab	Nivolumab
Basiliximab	Obinutuzumab
Bevacizumab[#2]	Ofatumumab
Bezlotoxumab	Olaratumab
Blinatumomab[#2]	Palivizumab
Brentuximab	Panitumumab
Cemiplimab	Pembrolizumab
Cetuximab	Pertuzumab[#1]
Daratumumab	Ramucirumab
Denosumab	Rituximab
Durvalumab	Tocilizumab
Eculizumab	Trastuzumab[#2]
Elotuzumab	Vedolizumab

[#]These MABs are classified as hazardous non-cytotoxic according to NIOSH 2016[1] or NIOSH 2018[2] Proposed Additions.

APPENDIX 3 – HAZARDOUS NON-CYTOTOXIC DRUGS

Those drugs with an asterix (*) are only reproductive hazardous – refer to page 5 for rationale of PPE
Refer to page 7 for recommended PPE for hazardous non-cytotoxic and reproductive hazardous drugs

Abacavir	Dihydroergotamine*	Lomitapide*	Regorafenib
Abiraterone	Dinoprostone*	Lorlatinib	Ribavirin*
Acitretin*	Dronedarone*	Loxo-292	Ribociclib
Afatinib	Dutasteride*	Macitentan*	Riociguat*
Alefacept	Enasidenib	Medroxyprogesterone	Risperidone
Ambrisentan*	Encorafenib	Megestrol	Sirolimus
Anastrazole	Entacavir	Methimazole	Sodium valproate*
Apomorphine	Enzalutamide	Midostaurin	Sorafenib
Asciminib	Erlotinib	Mifepristone*	Spironolactone
Asparaginase (Colaspase)	Eslicarbazepine*	Miltefosine*	Sunitinib
Axitinib	Estramustine	Mipomersin	Tacrolimus
Azathioprine	Everolimus	Misoprostol*	Tamoxifen
Bacillus Calmette-Guerin	Exemestane	Mitotane	Telavancin*
Bexarotene	Exenatide	Mycophenolate	Temazepam*
Bicalutamide	Finasteride*	Naferelin*	Temsirolimus
Binimetinib	Fingolamod	Nevirapine	Teriflunomide
Birinapant	Fluconazole*	Nilotinib	Testosterones (all types)*
Bosentan*	Flucytosine	Oestrogens (all types)	Thalidomide
Bosutinib	Flutamide	Olaparib	Tofacitinib
Botulinum toxins	Fosphenytoin	Osimertinib	Topiramate*
Cabergoline*	Fulvestrant	Ospemifene	Toremifene
Cabozantinib	Ganciclovir	Oxcarbazepine	Trametinib
Carbamazepine	Ganirelix*	Oxytocin*	Tretinoin (ATRA) *
Ceritinib	Gefitinib	Palifermin	Triazolam*
Cetrorelix*	Goserelin	Paliperidone	Trifluridine + tipiracil
Chloramphenicol	Icatibant*	Pamidronate*	(combination only)
Cidofovir	Imatinib	Paroxetine*	Triptorelin
Clobazam*	Interferon beta-1b	Pasireotide*	Ulipristal*
Clomiphene*	Isotretinoin*	Pazopanib	Valganciclovir
Clonazepam*	Ixazomib	Pentamidine	Vandetanib
Cobimetinib	Ivabradine*	Phenoxybenzamine	Vemurafenib
Colchicine*	Lapatinib	Phenytoin	Vismodegib
Crizotinib	Leflunomide	Plerixifor*	Voriconazole*
Cyclosporin	Lenalidomide	Pomalidomide	Warfarin*
Dabrafenib	Lenvatinib	Ponatinib	Zidovudine
Darbepoetin alfa	Letrozole	Progesterones (all types)	Ziprasidone*
Dasatinib	Leuprorelin	Propylthiouracil	Zoledronic acid*
Deferiprone	Liraglutide	Raloxifene	Zonisamide*
Degaralix			